Prior art attempts to overcome this problem have included several variations, making use of different light sources, such as electric lighting elements, lightsticks, as well as attempts in which photostorage material is mixed into the ball's cover material.

In the case of prior art making use of electric lighting elements, such as disclosed in U.S. Patent number 6,257,995, complex electrical circuits and switches, as well as batteries and LEDs are enclosed within the ball's core, inside an outer translucent shell. Such electrical elements create the problem of uneven weight distribution, which can affect the flight properties of the ball, as well as affecting the compression characteristics when hit with a golf club. Another problem is the fragile nature of electrical circuits, batteries and lighting elements, which when hit by the severe impact of a golf club, can be rendered inoperable.

Other prior art, such as disclosed in U.S. Patent number 4,878,674, includes the use of separate, cylindrical lightsticks, which are activated, then inserted through a hole drilled through the core of a translucent golf ball. This example of prior art would seem to provide adequate light for its purpose. However, due to the cylindrical shape of the lightsticks, weight distribution in necessarily uneven, and performance of these golf balls is severely impaired, traveling slightly more than half the distance of a standard, non-luminescent, golf ball hit with the same club. Another problem presented by this prior art is that a separate lighting element is utilized, first activated, then inserted into the ball. Thus, the lighting element is not a self-contained structural component of the ball itself, which diminishes distance and flight characteristics.

Another example of prior art makes use of photostorage materials, mixed into the cover, and outer layer materials, such as disclosed in U.S. Patent number 5,330,195. This prior art is able to create a ball, which is of standard size and weight, with performance characteristics similar to standard golf balls. However, the energy required to power the photostorage material is not contained within the ball, requiring the use of a flashlight or similar device to first charge the photostorage material before use. Thus the light source is not self-powered.

[The distance and path of flight a golf ball travels when struck by a golf club is determined by the force imparted upon the ball and resulting compression; and by its spin characteristics while in flight. According to the rules of golf, the golf ball must be played "as it lays". The golfer has no opportunity to move or position the ball to strike it on a preferred side. If a golfer is using a golf ball with a non-uniform construction, such as a cylindrical core, as described in U.S. Patent number 4,878,674, the golf ball might be struck on the end of the cylindrical core on one shot, and the next shot be struck on its side or at an odd angle in relation to the core causing the golf ball to have unpredictable compression. A cylindrical core, or other non-uniform construction will also cause improper spin due to uneven weight distribution, causing the ball to wobble in flight and travel a much lesser distance than a uniformly spherical golf ball. It is critical for distance and performance that the golf ball core and other components, be uniformly spherical so as to have predictable compression as well as natural and even spin characteristics.]

Thus, there remains a need for a luminescent golf ball with a self-contained and self-powered lighting device to be made more visible in low light conditions, which complies with the United States Golf Association ("USGA") rules and regulations for golf ball size and weight, and having with general performance characteristics similar to standard, non-luminescent, golf balls.

SUMMARY OF INVENTION

The present invention utilizes a chemiluminescent liquid mixture-[separated by a breakable partitioning element, encapsulated] within a spherical inner core of a golf ball, enclosed within outer translucent layers of materials common to-standard, non-luminescent, golf ball construction. [Activation of the chemiluminescent components occurs when an external force, sufficient to break the partitioning element inside the golf ball, is applied and causing the chemiluminescent components to mix.] [The activated liquid] will provide adequate light to be seen at a distance in low light conditions for a matter of hours, allowing for continued play in twilight or at night. [The spherical core allows for a golf ball with predictable compression when struck from any side, as well as even weight distribution for balanced spin characteristics while in flight, for performance and distance similar to standard, non-luminescent, golf balls.]

OBJECTS AND ADVANTAGES

Accordingly, besides the objects and advantages of the chemiluminescent golf ball described above, other objects and advantages of the present invention are:

a. to provide a golf ball which has a self-contained and self-powered light source, providing greater visibility in low light conditions, making it easier for golfers to find their ball, and continue to play in such conditions;

b. to incorporate a light source without necessity of outside charging devices or separate components;

c. to incorporate the lighting source itself as a structural component inside a solid golf ball, in the shape of a sphere, providing performance characteristics similar to standard, non-luminescent, golf balls;

d. to provide a golf ball which conforms to standard golf ball size, weight, and performance requirements as set by the USGA, and/or other golf organizations worldwide.

Further, objects and advantages will become apparent from a consideration of the ensuing descriptions and drawings.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. 1 - shows a cross section of the chemiluminescent golf ball.

FIG. 2a - shows a cutaway view of the chemiluminescent golf ball.

FIG. 2b – shows a cutaway view of the chemiluminescent golf ball as deformed by the application of external force sufficient to rupture the partition (partition ruptured, chemiluminescent liquids mixed and activated).

REFERENCE NUMERALS IN DRAWINGS

1 Outer translucent layer
2 Inner core shell
3 Chemiluminescent liquid component A
4 Partition
5 Chemiluminescent liquid component B
6 Chemiluminescent liquid component A
7 Partition
8 Chemiluminescent liquid component B
9 Inner core shell
10 Outer Translucent layer
11 Chemiluminescent liquid mixture
12 Ruptured partition

[DESCRIPTION – FIG. 1 – EMBODIMENT

The embodiment of the chemiluminescent golf ball of the present is illustrated in FIG. 1 (cross section). The golf ball is comprised of (1) an outer layer of translucent polymer material common to golf ball construction, (2) an inner core shell, also of translucent polymer material; encapsulating (3) chemiluminescent liquid component A, (4) a breakable partition of glass or brittle plastic, and (5) chemiluminescent liquid component B.]

[DESCRIPTION - FIG 2a and 2b – EMBODIMENT

The embodiment of the chemiluminescent golf ball of the present invention is illustrated in FIG 2a (cut-away view), and FIG 2b (cut-away view), before and after activation.

The components of the chemiluminescent liquid (6 and 8) are held separate by a partition (7), all of which are encapsulated within the inner core shell (9). An outer layer (13) of translucent polymer material commonly used in golf ball construction wholly encapsulates the core.

The embodiment of the chemiluminescent golf ball illustrated in FIG 2b (cut-away view), shows the ball when sufficient external force is applied, so as to compress the ball, and rupture the partition (12), thereby allowing the chemiluminescent liquid components, A and B, to mix (11), creating light, which is transmitted through the outer layer (13.]

OPERATION

The manner of using the present invention is by means of activation by applying an external force (e.g. striking the golf ball with a golf club), sufficient to cause the golf ball to compress and the partition within the core to rupture, and allow] [the chemiluminescent liquid components] to mix and create the active chemiluminescent liquid mixture. When activated, the golf ball of this invention is luminescent and more clearly visible to the eye in low light conditions, as well as having properties of spin, distance, and flight characteristics similar to standard golf balls.

CONCLUSION AND RAMIFICATIONS

Accordingly, the reader will see that the luminescent golf ball of this invention can be of great use to golfers seeking to finish a round at twilight, play at night, or in other low light conditions as their ball would be made more visible and less susceptible to being lost due to darkness or shadows. The present invention also allows for storage for long periods of time prior to use, and can be activated easily and quickly to be made ready for use. Also, because of substantially even weight distribution of the self contained lighting source, the present invention can be made to perform similarly to standard, non-luminescent golf balls, thus, and not sacrificing ball performance.

Although the description above contains many specificities, these should not be construed as limiting the scope of the invention, but merely providing illustrations of some of the presently preferred embodiments of this invention. For example the [partitioning element] can have a variety of different shapes and be positioned in a number of different ways.

CLAIMS:

We claim:

1. A spherical, luminescent golf ball comprising:

   a. an outer layer of translucent polymer material, allowing for transmission and diffusion of light;
   b. a substantially spherical inner [chamber] containing two components of a chemiluminescent liquid mixture [and]
   c. a [partitioning element] [separating] said [two] components of chemiluminescent liquid mixture, [which when sufficient impact is

applied to the golf ball, will rupture thereby allowing said chemiluminescent components to mix, and produce light energy];

d. [said partitioning element, wholly encapsulated by inner core shell, housing said two components, wholly encapsulated by outer layer.]

BY: _____
Christopher Redwine

BY: _____
Matthew Schoenfeld